## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: GENERAL ENGLISH I**

**COURSE CODE: EN18101**

**CREDITS: 3**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** To distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage of language and for developing the art of parallel listening and writing. | IV(ANALYZE) |
| **CO2** | **CO2:** To construct vocabulary and to gain understanding on the tense component, a pivotal constituent for language structuring and vocabulary building. | III (APPLY) |
| **CO3** | **CO3:** To identify with economical word constructions, paying specific attention in constructing sound writing skills | I (REMEMBER) |
| **CO4** | **CO4:** To interpret functional grammar, the basic part involved in sentence constructing to improve linguistic skills. | V (EVALUATE) |
| **CO5** | **CO5:** To develop communication skills to provide a platform for language efficiency for effective language delivery. | VI(CREATE) |

**Table 1: CO, PO, PSO MAPPING**

| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |

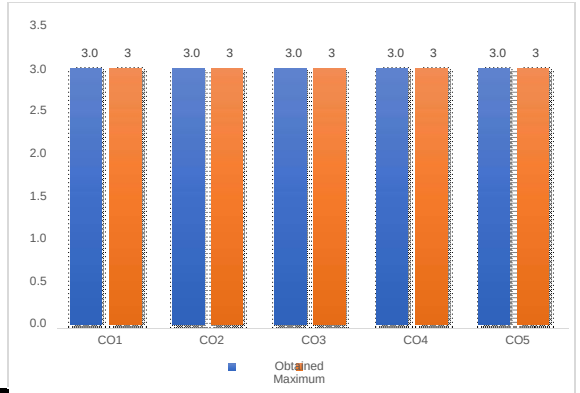
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **H** | **H** | **S** | **H** | **H** | | **H** | **H** | **S** | **H** | | **H** | |
| 2 | **H** | **H** | | **H** | | **H** | **H** | **S** | **H** | **H** | | **H** | |
| 3 | | **H** | **H** | **H** | **H** | **H** | | **S** | | **H** | | | |
| 4 | **H** | **H** | **H** | | **H** | | **H** | | **H** | **S** | | **S** | |
| 5 | **H** | | **H** | **S** | **H** | | **H** | | **H** | | | **H** | |

**H: Highly Supportive** **S: Supportive**

**Table 2: COURSE OUTCOME ATTAINMENT**

**ATTAINMENT SCALE:**

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass % | Attainment level | pass % | Attainment level | pass% | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO1 | 95.8 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO2 | 95.8 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO3 | 95.8 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 3 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | | | H 0.96 | | | | | H 0.96 |
| CO2 | | | | H 1 | | H 1 | H 1 | |
| CO3 | | | H 1.04 | H 1.04 | H 1.04 | H 1.04 | | |
| CO4 | | | | | H 1 | | H 1 | |
| CO5 | H 1 | H 1 | H 1 | H 1 | | | H 1 | H 1 |
| AVERAGE OF COS FOR POS | 1 | 1 | 1 | 1.013333333 | 1.02 | 1.02 | 1 | 0.98 |
| AVERAGE OF POS | 1 | 1 | 1.013333 | 1.013333 | 1.02 | 1.02 | 1 | 0.99 |
| AVERAGE | 1.007083333 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: VALUE EDUCATION & PERSONALITY DEVELOPMENT**

**COURSE CODE: VE18101**

**CREDITS: 2**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** Students will be able to differentiate Accepted norms and counter values and be able to **identify** the various Dimensions of Human Development | IV(ANALYZE) |
| **CO2** | **CO2:** Students will be able to **demonstrate** Love and Experience of God and identify the Basic Issues of Life and Happiness as a life goal | III (APPLY) |
| **CO3** | **CO3:** They will able to **understand** the importance of concern for others and sritique the various problems that deter the growth of the society | II (UNDERSTAND) |
| **CO4** | **CO4:** The students will be able to recognize the traits of a good personality and practice Self exploration | I (REMEMBER) |
| **CO5** | **CO5:** Students will be able to interpret the purpose of life and goal setting and demonstrate self-management | III (APPLY) |

**Table 1: CO, PO, PSO MAPPING**

| **Course outcomes** | **Programme Outcomes** | | | | | | | | **Program Specific outcomes** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |

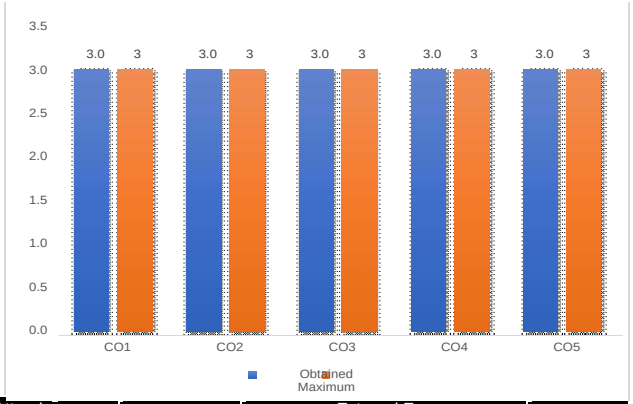
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **H** | **H** | **H** | **H** | **H** | | **H** | **H** | | **H** | | **H** | |
| 2 | **H** | **H** | | **H** | | **H** | **H** | | **H** | **H** | | **H** | |
| 3 | **H** | **H** | **H** | **H** | **H** | **H** | | | **S** | **H** | **H** | **H** | |
| 4 | **H** | **H** | **H** | | **H** | | **H** | | **H** | **S** | | **S** | |
| 5 | **H** | | **H** | **H** | **H** | | **H** | | **H** | **H** | | **H** | |

**H: Highly Supportive** **S: Supportive**

**Table 2: COURSE OUTCOME ATTAINMENT**

**ATTAINMENT SCALE:**

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO1 | 95.8 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO2 | 95.8 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO3 | 95.8 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |
| CO5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 85.4 | 3.0 | 3.0 | 97.9 | 3.0 | 3.0 | 3.0 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 3 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 3 | H 3 | H 3 | H 3 | H 3 | | H 3 | H 3 |
| CO2 | H 3 | H 3 | | H 3 | | H 3 | H 3 | |
| CO3 | H 3 | H 3 | H 3 | H 3 | H 3 | H 3 | | |
| CO4 | H 3 | H 3 | H 3 | | H 3 | | H 3 | |
| CO5 | H 3 | | H 3 | H 3 | H 3 | | H 3 | |
| AVERAGE OF COS FOR POS | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| AVERAGE OF POS | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| AVERAGE | 3 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: INTRODUCTION TO WORK SHEETS**

**COURSE CODE: CSC20101**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

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**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** Explain the concepts of MS-Excel | II (UNDERSTAND) |
| **CO2** | **CO2:** Analyze various functions and illustrate data in Excel | IV(ANALYZE) |
| **CO3** | **CO3:** Demonstrate the working of Visual Basic | III (APPLY) |
| **CO4** | **CO4:** Develop programming concepts using VB | VI(CREATE) |
| **CO5** | **CO5:** Subdivide larger programs into smaller ones using subroutines | IV(ANALYZE) |

**Table 1: CO, PO, PSO MAPPING**

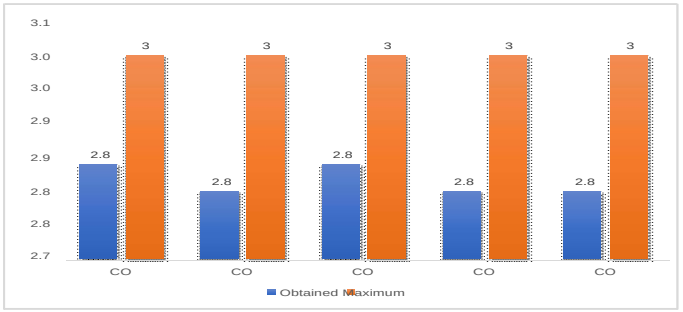
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | P08 | PSO1 | PSO2 | PSO3 | PSO4 | |
| 1 | H | H | | H | H | | S | H | S | H | | H | |
| 2 | H | H | H | H | S | H | H | S | | H | | H | |
| 3 | | S | H | | H | | | | | | H | | |
| 4 | S | H | S | | H | | H | H | H | S | S | | |
| 5 | H | | H | | H | | H | | H | | | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam | | mid exam | | group | | assignmen | | viva | | Attendenc | | | External | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass | Attainment | pass % | Attainment level | pass | Attainment | pass | Attainment | pass | Attainment | pass | Attainment | co wise internal | pass | Attainment level | co wise external average | co wise total average |
| CO 1 | 91.7 | 3.0 | | | 100.0 | 3.0 | 100. | | 100.0 | 3.0 | 68.8 | 1.0 | 2.6 | 97.9 | 3.0 | 3.0 | 2.8 |
| CO 2 | 91.7 | 3.0 | 93.8 | | 100.0 | 3.0 | | | 100.0 | 3.0 | 68.8 | 1.0 | 2.5 | 97.9 | 3.0 | 3.0 | 2.8 |
| CO 3 | | | 93.8 | | 100.0 | 3.0 | | | 100.0 | 3.0 | 68.8 | 1.0 | 2.5 | 97.9 | 3.0 | 3.0 | 2.8 |

| AVERA | AVERA |
|---|---|
| 3 | 2.816 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

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| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.84 | H 2.84 | | H 2.84 | H 2.84 | | | H 2.84 |
| CO2 | H 2.8 | H 2.8 | H 2.8 | H 2.8 | | H 2.8 | H 2.8 | |
| CO3 | | | H 2.84 | | H 2.84 | | | |
| CO4 | | H 2.8 | | | H 2.8 | | H 2.8 | H 2.8 |
| CO5 | H 2.8 | | H 2.8 | | H 2.8 | | H 2.8 | |
| AVERAGE OF COS FOR POS | 2.813333333 | 2.813333333 | 2.813333333 | 2.82 | 2.82 | 2.8 | 2.8 | 2.82 |
| AVERAGE OF POS | 2.804444 | 2.804444 | 2.813333 | 2.81 | 2.815 | 2.8 | 2.8 | 2.81 |
| AVERAGE | 2.807152778 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: OPERATING SYSTEMS**

**COURSE CODE:CSC20102**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
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**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** Explain Process management and CPU scheduling | II (UNDERSTAND) |
| **CO2** | **CO2:** Understand deadlock and paging concept. | II (UNDERSTAND) |
| **CO3** | **CO3:** Demonstrate Windows 7 Installation. | III (APPLY) |
| **CO4** | **CO4:** Analyze about Windows server 2012. | IV(ANALYZE) |
| **CO5** | **CO5:** Demonstrate Windows Server 2012-Storage and Backup Management. | III (APPLY) |

**Table 1: CO, PO, PSO MAPPING**

| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | | **S** | **H** | **S** | | **S** | | **S** | **H** | **H** | **S** | |

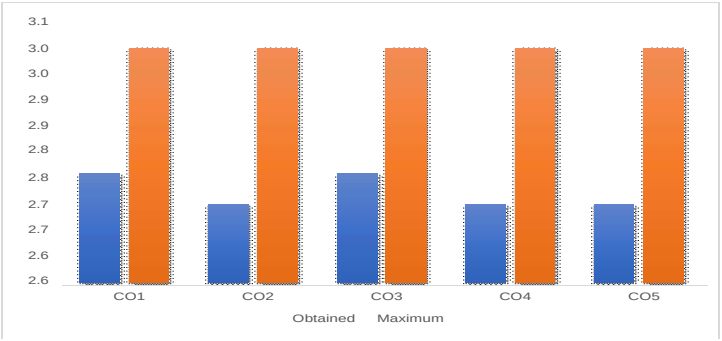
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | **H** | **H** | **H** | **H** | **H** | **S** | | **H** | | **H** | **H** | **H** | |
| 3 | | **H** | **H** | **H** | | **S** | **H** | **S** | **H** | **H** | **S** | **H** | |
| 4 | **H** | | | **H** | **S** | | | | **H** | **S** | | **S** | |
| 5 | **H** | | **H** | | **S** | | **S** | **H** | | | | **H** | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

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**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
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| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO 1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 58.3 | 0.0 | 2.4 | 85.4 | 3.0 | 3.0 | 2.8 |
| CO 2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 58.3 | 0.0 | 2.3 | 85.4 | 3.0 | 3.0 | 2.7 |
| CO 3 | 100.0 | 3.0 | 91.7 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 58.3 | 0.0 | 2.4 | 85.4 | 3.0 | 3.0 | 2.8 |
| CO 4 | | | 91.7 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 58.3 | 0.0 | 2.3 | 85.4 | 3.0 | 3.0 | 2.7 |
| CO 5 | | | 91.7 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 58.3 | 0.0 | 2.3 | 85.4 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.724 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | | | H 3 | | | | | |
| CO2 | H 3 | | | H 3 | | | H 3 | |
| CO3 | H 3 | | H 3 | H 3 | H 3 | H 3 | | H 3 |
| CO4 | | | | H 3 | | | H 3 | |
| CO5 | H 3 | | H 3 | H 3 | | | | H 3 |
| AVERAGE OF COS FOR POS | 3 | | 3 | 3 | 3 | 3 | 3 | 3 |
| AVERAGE OF POS | 3 | | 3 | 3 | 3 | 3 | 3 | 3 |
| AVERAGE | 3 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: COMPUTER FUNDAMENTALS**

**COURSE CODE: CSC20103**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** Understand various I/O devices and functionality of computer. | II (UNDERSTAND) |
| **CO2** | **CO2:** Understand types of memory and software | II (UNDERSTAND) |
| **CO3** | **CO3:** Solve arithmetic operations using different types of number systems | III (APPLY) |
| **CO4** | **CO4** Distinguish different types of networks, networking devices and topologies. | IV(ANALYZE) |
| **CO5** | **CO5: :** Explain various IP addressing mechanisms. | II (UNDERSTAND) |

**Table 1: CO, PO, PSO MAPPING**

| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **H** | | **H** | **H** | | **H** | **H** | **S** | **H** | | **H** | |

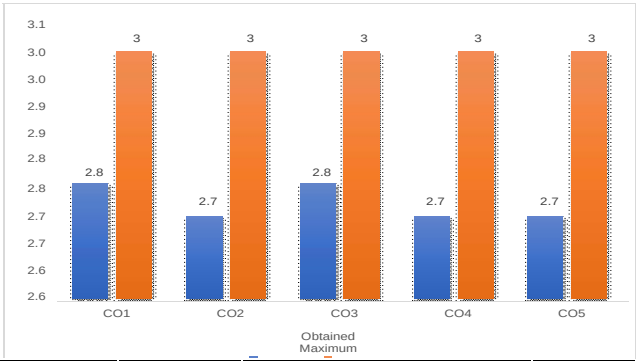
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | **H** | | **H** | | **H** | **H** | **S** | **H** | **H** | **H** | **H** | |
| 3 | | | **H** | **H** | **H** | **H** | **H** | **S** | **S** | | **H** | | |
| 4 | **H** | **H** | **H** | | **S** | | **H** | **H** | **H** | **S** | **S** | **S** | |
| 5 | **H** | | **H** | | **H** | | **H** | **H** | **H** | | | **H** | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 52.1 | 0.0 | 2.4 | 95.8 | 3.0 | 3.0 | 2.8 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 52.1 | 0.0 | 2.3 | 95.8 | 3.0 | 3.0 | 2.7 |
| CO3 | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 52.1 | 0.0 | 2.4 | 95.8 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 52.1 | 0.0 | 2.3 | 95.8 | 3.0 | 3.0 | 2.7 |
| CO5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 52.1 | 0.0 | 2.3 | 95.8 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.724 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | | H 2.76 |
| CO2 | | H 2.7 | | H 2.7 | | H 2.7 | H 2.7 | |
| CO3 | | | H 2.76 | H 2.76 | H 2.76 | H 2.76 | | |
| CO4 | H 2.7 | H 2.7 | H 2.7 | | | | H 2.7 | H 2.7 |
| CO5 | H 2.7 | | H 2.7 | | H 2.7 | | H 2.7 | |
| AVERAGE OF COS FOR POS | 2.72 | 2.72 | 2.72 | 2.74 | 2.74 | 2.73 | 2.7 | 2.73 |
| AVERAGE OF POS | 2.706667 | 2.706667 | 2.72 | 2.733333 | 2.733333 | 2.73 | 2.7 | 2.715 |
| AVERAGE | 2.718125 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: PROBLEM SOLVING AND PROGRAMMING IN C**

**COURSE CODE: CSC20104**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** Explain the basic introduction of C programming languages. | II (UNDERSTAND) |
| **CO2** | **CO2:** Categorize different data types, operators and data input /output functions in C' | VI(CREATE) |
| **CO3** | **CO3:** Develop programs using 'C' control structures, arrays and string concept | VI(CREATE) |
| **CO4** | **CO4:** Analyse larger problems into smaller ones using 'C' functions. | IV(ANALYZE) |
| **CO5** | **CO5:** Create programs using the concept of structures, union and file handling in 'C'. | VI(CREATE) |

**Table 1: CO, PO, PSO MAPPING**

| **Course outcomes** | **Programme Outcomes** | | | | | | | | **Program Specific outcomes** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **H** | | **H** | **H** | | | **H** | **S** | **H** | | **H** | |

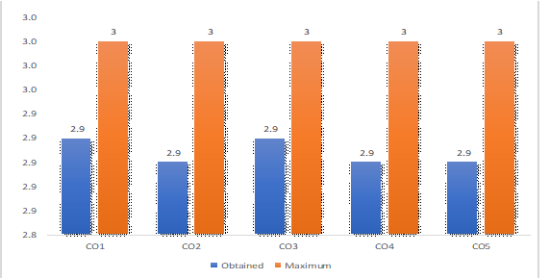
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | **H** | | **H** | | **H** | | | | **H** | | **H** | |
| 3 | **H** | | | **H** | **H** | | | | | **H** | | | |
| 4 | **S** | **H** | **S** | | **H** | **H** | **H** | **H** | **H** | **S** | | **H** | |
| 5 | **H** | | **H** | | **H** | | **H** | **H** | **H** | | | **H** | |

**H: Highly Supportive** **S: Supportive**

# Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 83.3 | 2.0 | 2.8 | 85.4 | 3.0 | 3.0 | 2.9 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 83.3 | 2.0 | 2.8 | 85.4 | 3.0 | 3.0 | 2.9 |
| CO3 | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 83.3 | 2.0 | 2.8 | 85.4 | 3.0 | 3.0 | 2.9 |
| CO4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 83.3 | 2.0 | 2.8 | 85.4 | 3.0 | 3.0 | 2.9 |
| CO5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 83.3 | 2.0 | 2.8 | 85.4 | 3.0 | 3.0 | 2.9 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.908 |

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.92 | H 2.92 | | H 2.92 | H 2.92 | | | H 2.92 |
| CO2 | | H 2.9 | | H 2.9 | | H 2.9 | | |
| CO3 | H 2.92 | | | H 2.92 | H 2.92 | | | |
| CO4 | | H 2.9 | | | H 2.9 | H 2.9 | H 2.9 | H 2.9 |
| CO5 | H 2.9 | | H 2.9 | | H 2.9 | | H 2.9 | H 2.9 |
| AVERAGE OF COS FOR POS | 2.913333333 | 2.906666667 | 2.9 | 2.913333333 | 2.91 | 2.9 | 2.9 | 2.906666667 |
| AVERAGE OF POS | 2.911111 | 2.902222 | 2.9 | 2.911111 | 2.9075 | 2.9 | 2.9 | 2.902222 |
| AVERAGE | 2.904270833 | | | | | | | |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.92 | H 2.92 | | H 2.92 | H 2.92 | | | H 2.92 |
| CO2 | | H 2.9 | | H 2.9 | | H 2.9 | | |
| CO3 | H 2.92 | | | H 2.92 | H 2.92 | | | |
| CO4 | | H 2.9 | | | H 2.9 | H 2.9 | H 2.9 | H 2.9 |
| CO5 | H 2.9 | | H 2.9 | | H 2.9 | | H 2.9 | H 2.9 |
| AVERAGE OF COS FOR POS | 2.913333333 | 2.906666667 | 2.9 | 2.913333333 | 2.91 | 2.9 | 2.9 | 2.906666667 |
| AVERAGE OF POS | 2.911111 | 2.902222 | 2.9 | 2.911111 | 2.9075 | 2.9 | 2.9 | 2.902222 |
| AVERAGE | 2.904270833 | | | | | | | |

**COURSE OUTCOME MAPPING**

**MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES**

| |
|---|
| **COURSE TITLE: ENVIRONMENTAL STUDIES AND GENDER SENSITIZATION**<br><br>**COURSE CODE: ES18101**<br><br>**CREDITS: 3** |
| **DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS** |
| **Programme Outcomes – (B. Sc.)**<br><br>**B. Sc.:** |

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety

of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1:** Understand the importance of environmental education, conservation of natural resources & understand the importance of ecosystems and biodiversity | II (UNDERSTAND) |
| **CO2** | **CO2:** Understand the pollution problems and apply the environmental science knowledge on solid waste management, disaster management | II (UNDERSTAND) |
| **CO3** | **CO3:** Apply the environmental science knowledge to improve the resources<br>Evaluate and understand the sustainable environmental conditions and control methods | III (APPLY) |
| **CO4** | **CO4:** Identify the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems | IV(ANALYZE) |
| **CO5** | **CO5:** Understand the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislations | II (UNDERSTAND) |

**Table 1: CO, PO, PSO MAPPING**

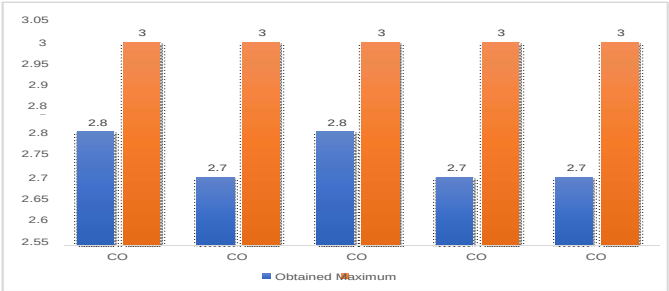
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | P08 | PSO1 | PSO2 | PSO3 | PSO4 | |
| 1 | H | S | H | S | S | H | S | H | H | S | S | H | |
| 2 | | | | H | | S | H | S | H | H | H | | |
| 3 | S | H | H | S | H | H | S | H | | S | | S | |
| 4 | H | S | S | | S | | | H | S | H | S | S | |
| 5 | S | H | H | S | S | H | S | H | H | H | | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

**ATTAINMENT SCALE:**

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam | | mid exam | | group | | assignmen | | viva | | Attendenc | | | External | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass | Attainment level | pass% | Attainment level | pass% | Attainment level | pass | Attainment level | pass | Attainment level | pass | Attainment level | co wise internal averag | pass% | Attainment level | co wise external total | co wise average |
| CO 1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100. | 3.0 | 100.0 | 3.0 | 53.1 | 0.0 | e | 100 | 3.0 | average | average |
| CO 2 | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 53.1 | 0.0 | 2.4 | 100 | 3.0 | 3.0 | 2.8 |
| CO 3 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 53.1 | 0.0 | 2.3 | 100 | 3.0 | 3.0 | 2.7 |
| CO 4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 53.1 | 0.0 | 2.4 | 100 | 3.0 | 3.0 | 2.8 |
| CO 5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 53.1 | 0.0 | 2.3 | 100 | 3.0 | 3.0 | 2.7 |

| AVERA | AVERAGE |
|---|---|
| | 2.72 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | | H 2.76 | | | H 2.76 | | H 2.76 |
| CO2 | | | | H 2.7 | | | H 2.7 | |
| CO3 | | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | H 2.76 |
| CO4 | H 2.7 | | | | | | | H 2.7 |
| CO5 | | H 2.7 | H 2.7 | | | H 2.7 | | H 2.7 |
| AVERAGE OF COS FOR POS | 2.73 | 2.73 | 2.74 | 2.7 | 2.76 | 2.74 | 2.7 | 2.73 |
| AVERAGE OF POS | 2.715 | 2.73 | 2.733333 | 2.7 | 2.76 | 2.733333 | 2.7 | 2.7225 |
| AVERAGE | 2.724270833 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: PYTHON PROGRAMMING**

**COURSE CODE: CSC21304**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1: Explain** the basics of Python Programming constructs. | V (EVALUATE) |
| **CO2** | **CO2: Sub divides** larger problems into smaller ones using functions | IV(ANALYZE) |
| **CO3** | **CO3: Apply** various data structures for problem solving | III (APPLY) |
| **CO4** | **CO4: Apply** object-oriented programming features for solving a given problem | III (APPLY) |
| **CO5** | **CO5: Select** an appropriate exception handling depending on application and design file operations using Python standard library. | IV(ANALYZE) |

**Table 1: CO, PO, PSO MAPPING**

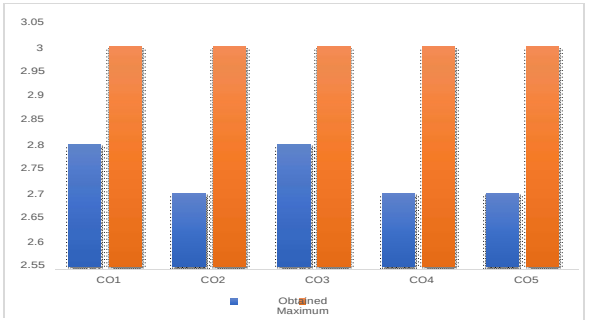
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **S** | **H** | **S** | **S** | **H** | **S** | **S** | **H** | **S** | **S** | **H** | |
| 2 | **H** | | **H** | **H** | | **S** | **H** | **S** | **H** | **H** | **H** | **H** | |
| 3 | **H** | **H** | **H** | **H** | **H** | | **H** | **S** | **S** | **H** | | **H** | |
| 4 | **H** | **S** | **H** | **H** | **S** | | **H** | **S** | | **H** | | **S** | |
| 5 | **H** | | **H** | **H** | **S** | **H** | **S** | **H** | | **H** | **S** | **H** | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass % | Attainment level | pass% | Attainment level | pass% | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 46.9 | 3.0 | 2.4 | 98 | 3.0 | 3.0 | 2.8 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 46.9 | 3.0 | 2.3 | 98 | 3.0 | 3.0 | 2.7 |
| CO3 | 100.0 | 3.0 | 93.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 46.9 | 3.0 | 2.4 | 98 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 93.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 46.9 | 3.0 | 2.3 | 98 | 3.0 | 3.0 | 2.7 |
| CO5 | | | 93.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 46.9 | 3.0 | 2.3 | 98 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.724 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | | H 2.76 | | | H 2.76 | | |
| CO2 | H 2.7 | | H 2.7 | H 2.7 | | | H 2.7 | |
| CO3 | H 2.76 | H 2.76 | H 2.76 | H 2.76 | H 2.76 | | H 2.76 | |
| CO4 | H 2.7 | | H 2.7 | H 2.7 | | | H 2.7 | |
| CO5 | H 2.7 | | H 2.7 | H 2.7 | | H 2.7 | | H 2.7 |
| AVERAGE OF COS FOR POS | 2.724 | 2.76 | 2.724 | 2.715 | 2.76 | 2.73 | 2.72 | 2.7 |
| AVERAGE OF POS | 2.7168 | 2.76 | 2.7168 | 2.715 | 2.76 | 2.715 | 2.72 | 2.7 |
| AVERAGE | 2.72545 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: VIRTUALIZATION AND CLOUD**

**COURSE CODE: CSC21303**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

considerations.

- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1: Understand** Distributed Systems and its Application. | II (UNDERSTAND) |
| **CO2** | **CO2: Analyze** Cloud Service Models and Deployment Models | IV(ANALYZE) |
| **CO3** | **CO3: Demonstrate** Virtual Networks Configuring and Managing Virtual Storage. | III (APPLY) |
| **CO4** | **CO4: Understand** vSphere Update Manager and Host Maintenance | II (UNDERSTAND) |
| **CO5** | **CO5: Demonstrate** Role of data center in cloud computing | III (APPLY) |

**Table 1: CO, PO, PSO MAPPING**

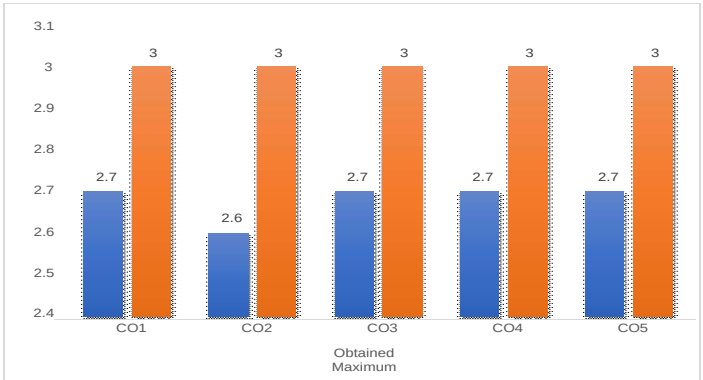
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **S** | **H** | **S** | **S** | **H** | **S** | **S** | **H** | **S** | **S** | **H** | |
| 2 | **H** | | **H** | **H** | | **S** | **H** | **S** | **H** | **H** | **H** | **H** | |
| 3 | | **H** | **H** | **H** | **H** | **S** | **H** | **S** | **S** | **H** | | **H** | |
| 4 | **H** | **S** | **H** | | **S** | | **H** | **S** | | **H** | **H** | **S** | |
| 5 | **H** | | **H** | **H** | **S** | **H** | **S** | **H** | **H** | **H** | **S** | **H** | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass % | Attainment level | pass% | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO 1 | 83.7 | 2 | | | 100 | 3 | 100 | 3 | 100 | 3 | 59.2 | 0 | 2.2 | 100 | 3 | 3 | 2.7 |
| CO 2 | 83.7 | 2 | | | 100 | 3 | | | 100 | 3 | 59.2 | 0 | 2 | 100 | 3 | 3 | 2.6 |
| CO 3 | 83.7 | 2 | 89.8 | 3 | 100 | 3 | | | 100 | 3 | 59.2 | 0 | 2.2 | 100 | 3 | 3 | 2.7 |
| CO 4 | | | 89.8 | 3 | 100 | 3 | | | 100 | 3 | 59.2 | 0 | 2.3 | 100 | 3 | 3 | 2.7 |
| CO 5 | | | 89.8 | 3 | 100 | 3 | | | 100 | 3 | 59.2 | 0 | 2.3 | 100 | 3 | 3 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.672 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO 1 | PO2 | PO 3 | PO 4 | PO 5 | PO6 | PO 7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.84 | | H 2.84 | | | | H 2.84 | |
| CO2 | H 2.8 | | H 2.8 | H 2.8 | | | | H 2.8 |
| CO3 | | H 2.84 | H 2.84 | H 2.84 | | | | H 2.84 |
| CO4 | H 2.8 | | H 2.8 | | | | | H 2.8 |
| CO5 | H 2.8 | | H 2.8 | H 2.8 | | | H 2.8 | |
| AVERAGE OF COS FOR POS | 2.81 | 2.84 | 2.816 | 2.813333333 | 2.84 | 2.82 | 2.813333333 | 2.8 |
| AVERAGE OF POS | 2.8025 | 2.84 | 2.8112 | 2.813333 | | 2.84 | 2.81 | 2.813333 |
| AVERAGE | 2.816295833 | | | | | | | |

## COURSE OUTCOME MAPPING

## MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: INFRASTRUCTURE MANAGEMENT**

**COURSE CODE: CSC21302**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.

- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

| |
|---|
| **PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance. |

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1: Demonstrate** Installation and Managing Windows 10 Systems | III (APPLY) |
| **CO2** | **CO2: Analyze** Manaing Systems using System Center 2012 | IV(ANALYZE) |
| **CO3** | **CO3: Demonstrate** Deployment and Management of System Center 2012 | III (APPLY) |
| **CO4** | **CO4: Understand** Managing and Monitoring Infrastructure using System Center 2012 | II(UNDERSTAND) |
| **CO5** | **CO5: Demonstrate** Reporting of Infrastructure using System Center 2012 | III (APPLY) |

**Table 1: CO, PO, PSO MAPPING**

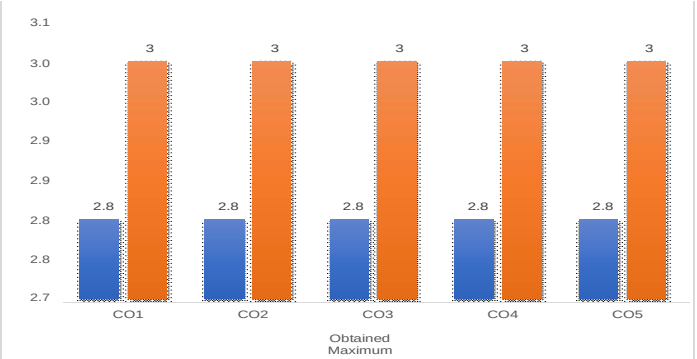
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **S** | **H** | **S** | **S** | **H** | **S** | **H** | **H** | **S** | **S** | **H** | |
| 2 | | **H** | | **H** | | **S** | **H** | **S** | **H** | **H** | **H** | **H** | |
| 3 | **S** | **H** | **H** | **S** | **H** | | **S** | **S** | | **S** | | **H** | |
| 4 | **H** | **S** | **S** | | **S** | **H** | **H** | **H** | | **H** | **H** | **S** | |
| 5 | **H** | | **H** | **H** | **S** | **H** | **S** | **H** | **H** | **H** | **S** | **H** | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO 1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 65.3 | 1.0 | 2.6 | 89.8 | 3.0 | 3.0 | 2.8 |
| CO 2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 65.3 | 1.0 | 2.5 | 89.8 | 3.0 | 3.0 | 2.8 |
| CO 3 | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 65.3 | 1.0 | 2.6 | 89.8 | 3.0 | 3.0 | 2.8 |
| CO 4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 65.3 | 1.0 | 2.5 | 89.8 | 3.0 | 3.0 | 2.8 |
| CO 5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 65.3 | 1.0 | 2.5 | 89.8 | 3.0 | 3.0 | 2.8 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.816 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.84 | | H 2.84 | | | H 2.84 | | H 2.84 |
| CO2 | | H 2.8 | | H 2.8 | | | H 2.8 | |
| CO3 | | H 2.84 | H 2.84 | | H 2.84 | | | |
| CO4 | H 2.8 | | | | | H 2.8 | H 2.8 | H 2.8 |
| CO5 | H 2.8 | | H 2.8 | H 2.8 | | H 2.8 | | H 2.8 |
| AVERAGE OF COS FOR POS | 2.813333333 | 2.82 | 2.826666667 | 2.8 | 2.84 | 2.813333333 | 2.8 | 2.813333333 |
| AVERAGE OF POS | 2.804444 | 2.82 | 2.822222 | 2.8 | 2.84 | 2.804444 | 2.8 | 2.804444 |
| AVERAGE | 2.811944444 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: DISCRETE MATHEMATICS**

**COURSE CODE: CSC21301**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.

- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

| |
|---|
| **PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance. |

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1: Develop** understanding of Logic Sets and Functions | VI (CREATE) |
| **CO2** | **CO2: Evaluate** and apply the fundamental concepts in graph theory | V (EVALUATE) |
| **CO3** | **CO3: Develop** an understanding of how graph and tree concepts are used to solve problems arising in the computer science | VI (CREATE) |
| **CO4** | **CO4: Express** the concepts and results of Number Theory. | IV (APPLY) |
| **CO5** | **CO5: Identify** methods and techniques used in number theory. | I (REMEMBER) |

**Table 1: CO, PO, PSO MAPPING**

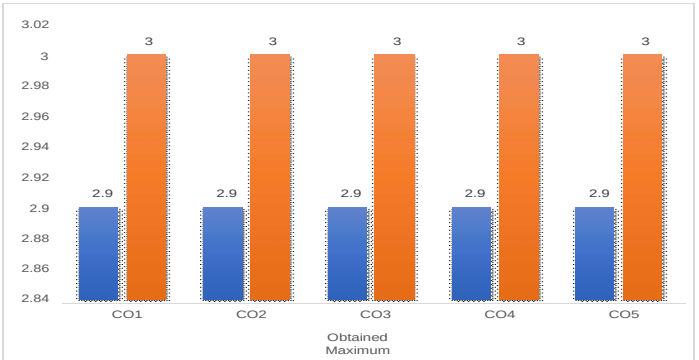
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **S** | **H** | **S** | **S** | **H** | **S** | **H** | **H** | **S** | **H** | **H** | |
| 2 | | | | **H** | | **S** | **H** | **S** | **H** | **H** | | | |
| 3 | **H** | **H** | **H** | **H** | **H** | **H** | **S** | **S** | | **S** | **H** | **H** | |
| 4 | **H** | **S** | **S** | | **S** | | | **H** | **S** | **H** | **S** | **S** | |
| 5 | **S** | **H** | **H** | **S** | **S** | **H** | **S** | **H** | **H** | **H** | **H** | **H** | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | pass % | Attainment level | co wise internal average | pass % | Attainment level | co wise external average | co wise total average |
| CO 1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 77.6 | 2.0 | 2.8 | 95.9 | 3.0 | 3.0 | 2.9 |
| CO 2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 77.6 | 2.0 | 2.8 | 95.9 | 3.0 | 3.0 | 2.9 |
| CO 3 | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 77.6 | 2.0 | 2.8 | 95.9 | 3.0 | 3.0 | 2.9 |
| CO 4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 77.6 | 2.0 | 2.8 | 95.9 | 3.0 | 3.0 | 2.9 |
| CO 5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 77.6 | 2.0 | 2.8 | 95.9 | 3.0 | 3.0 | 2.9 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.908 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.92 | | H 2.92 | | | H 2.92 | | H 2.92 |
| CO2 | | | | H 2.9 | | | H 2.9 | |
| CO3 | H 2.92 | H 2.92 | H 2.92 | H 2.92 | H 2.92 | H 2.92 | | |
| CO4 | H 2.9 | | | | | | | H 2.9 |
| CO5 | | H 2.9 | H 2.9 | | | H 2.9 | | H 2.9 |
| AVERAGE OF COS FOR POS | 2.913333333 | 2.91 | 2.913333333 | 2.91 | 2.92 | 2.913333333 | 2.9 | 2.906666667 |
| AVERAGE OF POS | 2.911111 | 2.91 | 2.911111 | 2.91 | 2.92 | 2.911111 | 2.9 | 2.902222 |
| AVERAGE | 2.909444444 | | | | | | | |

## COURSE OUTCOME MAPPING

**MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES**

**COURSE TITLE: INFORMATION AND STORAGE MANAGEMENT**

**COURSE CODE: CSC22501A**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a

member in diverse teams.

- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | **COURSE OUTCOMES** | **BLOOM'S TAXONOMY LEVEL** |
|---|---|---|
| **CO1** | **CO1: Understand** core elements of the data center. | II (UNDERSTAND) |
| **CO2** | **CO2: Explain** data protection technique. | II (UNDERSTAND) |
| **CO3** | **CO3:** Assess various storage networking technologies | V (EVALUATE) |
| **CO4** | **CO4:** Prepare backup and archiving of data | III(APPLY) |
| **CO5** | **CO5:** Organize data using replication techniques | VI(CREATE) |

**Table 1: CO, PO, PSO MAPPING**

| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO 2** | **PO 3** | **PO4** | **PO5** | **PO6** | **PO7** | **P08** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | |
| 1 | **H** | **H** | | **H** | **H** | | | **H** | **S** | **H** | | **H** | |
| 2 | | **S** | | **H** | | **H** | **H** | | | **H** | | | |
| 3 | **H** | | | **H** | **H** | | | | **H** | **H** | | | |
| 4 | **S** | **S** | **S** | **H** | **H** | **H** | **H** | **H** | **H** | **S** | **H** | **H** | |
| 5 | **H** | | **H** | | **H** | | **H** | **H** | **H** | | **H** | **H** | |

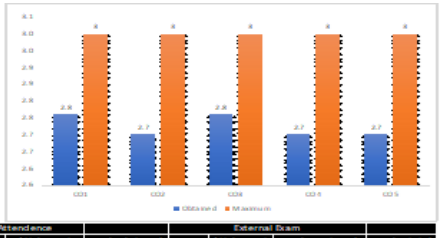
**H: Highly Supportive**

**S:Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

**ATTAINMENT SCALE:**

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**



| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 36.4 | 0.0 | 2.4 | 95.5 | 3.0 | 3.0 | 2.8 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 36.4 | 0.0 | 2.3 | 95.5 | 3.0 | 3.0 | 2.7 |
| CO3 | 100.0 | 3.0 | 95.5 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 36.4 | 0.0 | 2.4 | 95.5 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 95.5 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 36.4 | 0.0 | 2.3 | 95.5 | 3.0 | 3.0 | 2.7 |
| CO5 | | | 95.5 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 36.4 | 0.0 | 2.3 | 95.5 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.724 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | | H 2.76 |
| CO2 | | | | H 2.7 | | H 2.7 | H 2.7 | |
| CO3 | H 2.76 | | | H 2.76 | H 2.76 | | | |
| CO4 | | | | H 2.7 | H 2.7 | H 2.7 | H 2.7 | H 2.7 |
| CO5 | H 2.7 | | H 2.7 | | H 2.7 | | H 2.7 | H 2.7 |
| AVERAGE OF COS FOR POS | 2.74 | 2.76 | 2.7 | 2.73 | 2.73 | 2.7 | 2.7 | 2.72 |
| AVERAGE OF POS | 2.733333 | 2.76 | 2.7 | 2.7225 | 2.7225 | 2.7 | 2.7 | 2.706667 |
| AVERAGE | 2.718125 | | | | | | | |

## COURSE OUTCOME MAPPING

**MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES**

**COURSE TITLE: CLOUD COMPUTING TOOLS AND TECHNIQUES**

**COURSE CODE: CSC22501B**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology

activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | **COURSE OUTCOMES** | **BLOOM'S TAXONOMY LEVEL** |
|---|---|---|
| **CO1** | **CO1:** Explain the characteristics and components of cloud computing. | II (UNDERSTAND) |
| **CO2** | **CO2:** : Illustrate architectural influences, benefits and limitations of cloud | IV(ANALYZE) |
| **CO3** | **CO3:** Analyse various layers and models in cloud | IV(ANALYZE) |
| **CO4** | **CO4:** Assess various cloud simulators | V(EVALUATE) |
| **CO5** | **CO5:** Create virtual machines using VMWare Simulator . | VI(CREATE) |

**Table 1: CO, PO, PSO MAPPING**

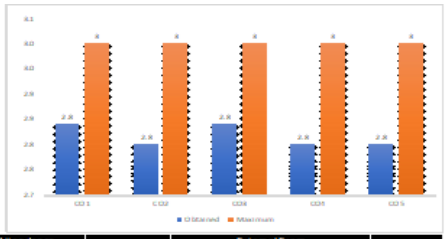
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | P08 | PSO 1 | PSO 2 | PSO 3 | PS O4 | |
| 1 | H | H | | H | H | | | H | | H | | H | |
| 2 | | H | | | | S | H | | | S | | | |
| 3 | H | | | H | H | | | S | | H | | | |
| 4 | S | | | H | | | S | H | H | S | H | H | |
| 5 | H | | H | | H | | H | S | H | | S | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**



| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 66.7 | 1.0 | 2.6 | 96.3 | 3.0 | 3.0 | 2.8 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 66.7 | 1.0 | 2.5 | 96.3 | 3.0 | 3.0 | 2.8 |
| CO3 | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 66.7 | 1.0 | 2.6 | 96.3 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 66.7 | 1.0 | 2.5 | 96.3 | 3.0 | 3.0 | 2.8 |
| CO5 | | | 100.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 66.7 | 1.0 | 2.5 | 96.3 | 3.0 | 3.0 | 2.8 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.810 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**




| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.84 | H 2.84 | | H 2.84 | H 2.84 | | | H 2.84 |
| CO2 | | H 2.8 | | | | | H 2.8 | |
| CO3 | H 2.84 | | | H 2.84 | H 2.84 | | | |
| CO4 | | | | H 2.8 | | | | H 2.8 |
| CO5 | H 2.8 | | H 2.8 | | H 2.8 | | H 2.8 | |
| AVERAGE OF COS FOR POS | 2.826666667 | 2.82 | 2.8 | 2.826666667 | 2.826666667 | | 2.8 | 2.82 |
| AVERAGE OF POS | 2.822222 | 2.81 | 2.8 | 2.822222 | 2.822222 | | 2.8 | 2.81 |
| AVERAGE | 2.812380952 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: MACHINE LEARNING**

**COURSE CODE: CSC22502**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | **COURSE OUTCOMES** | **BLOOM'S TAXONOMY LEVEL** |
|---|---|---|
| **CO1** | **CO1: Demonstrate** python constructs for machine learning. | III (APPLY) |
| **CO2** | **CO2: Illustrate** machine learning types and applications | IV(ANALYZE) |
| **CO3** | **CO3: Explain** concepts of neural network and regression for machine learning | II (UNDERSTAND) |
| **CO4** | **CO4: Evaluate** various classifiers of machine learning | V (EVALUATE) |
| **CO5** | **CO5: Design** unsupervised learning models | VI (CREATE) |

**Table 1: CO, PO, PSO MAPPING**

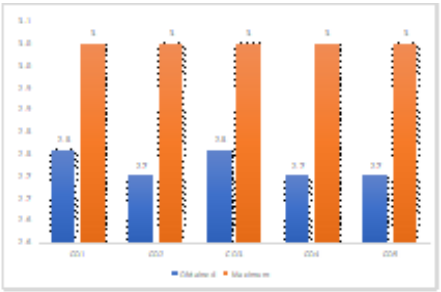
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO 6 | PO 7 | P08 | PSO 1 | PSO 2 | PSO 3 | PSO4 | |
| 1 | H | H | | H | H | | | H | | H | | H | |
| 2 | | H | | | | S | H | | | S | | | |
| 3 | H | H | | H | H | | | S | S | H | S | | |
| 4 | S | | | H | H | | S | H | H | S | H | H | |
| 5 | H | | H | | H | | H | S | H | | S | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

**ATTAINMENT SCALE:**

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**



| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendance | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass % | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 49.0 | 0.0 | 2.4 | 98.0 | 3.0 | 3.0 | 2.8 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 49.0 | 0.0 | 2.3 | 98.0 | 3.0 | 3.0 | 2.7 |
| CO3 | 100.0 | 3.0 | 95.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 49.0 | 0.0 | 2.4 | 98.0 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 95.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 49.0 | 0.0 | 2.3 | 98.0 | 3.0 | 3.0 | 2.7 |
| CO5 | | | 95.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 49.0 | 0.0 | 2.3 | 98.0 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.74 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**




| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | | H 2.76 |
| CO2 | | H 2.7 | | | | | H 2.7 | |
| CO3 | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | | |
| CO4 | | | | H 2.7 | H 2.7 | | | H 2.7 |
| CO5 | H 2.7 | | H 2.7 | | H 2.7 | | H 2.7 | |
| AVERAGE OF COS FOR POS | 2.34 | 2.34 | 2.7 | 2.34 | 2.73 | | 2.7 | 2.73 |
| AVERAGE OF POS | 2.733333 | 2.733333 | 2.7 | 2.733333 | 2.7225 | | 2.7 | 2.715 |
| AVERAGE | 2.719642857 | | | | | | | |

## COURSE OUTCOME MAPPING

**MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES**

**COURSE TITLE: SOFTWARE TESTING**

**COURSE CODE: CSC22503**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SSCIENCE & COGNITIVE SYSTEMSS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training,

and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1: Understand** Selenium Architecture and its components | II (UNDERSTAND) |
| **CO2** | **CO2: Use** Selenium WebDriver | III (APPLY) |
| **CO3** | **CO3: Apply** WebDriver advanced features | III (APPLY) |
| **CO4** | **CO4: Write** Test cases using Testing | II (UNDERSTAND) |
| **CO5** | **CO5: Develop** Record and importing tests with Selenium IDE | VI (CREATE) |

**Table 1: CO, PO, PSO MAPPING**

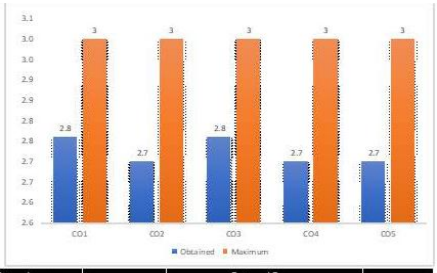
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | P08 | PSO 1 | PSO 2 | PSO 3 | PS O4 | |
| 1 | H | H | | H | H | | | H | | H | | H | |
| 2 | | S | | | | S | H | S | S | S | | | |
| 3 | H | S | | S | H | | S | S | H | H | S | H | |
| 4 | S | | | H | H | | H | H | H | H | H | H | |
| 5 | H | | H | | H | | H | S | H | | H | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 95.9 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 98.0 | 3.0 | 57.1 | 0.0 | 2.4 | 93.9 | 3.0 | 3.0 | 2.8 |
| CO2 | 95.9 | 3.0 | | | 100.0 | 3.0 | | | 98.0 | 3.0 | 57.1 | 0.0 | 2.3 | 93.9 | 3.0 | 3.0 | 2.7 |
| CO3 | 95.9 | 3.0 | 91.8 | 3.0 | 100.0 | 3.0 | | | 98.0 | 3.0 | 57.1 | 0.0 | 2.4 | 93.9 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 91.8 | 3.0 | 100.0 | 3.0 | | | 98.0 | 3.0 | 57.1 | 0.0 | 2.3 | 93.9 | 3.0 | 3.0 | 2.7 |
| CO5 | | | 91.8 | 3.0 | 100.0 | 3.0 | | | 98.0 | 3.0 | 57.1 | 0.0 | 2.3 | 93.9 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.724 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**




| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | | H 2.76 |
| CO2 | | | | | | | H 2.7 | |
| CO3 | H 2.76 | | | | H 2.76 | | | |
| CO4 | | | | H 2.7 | H 2.7 | | H 2.7 | H 2.7 |
| CO5 | H 2.7 | | H 2.7 | | H 2.7 | | H 2.7 | |
| AVERAGE OF COS FOR POS | 2.24 | 2.76 | 2.7 | 2.73 | 2.73 | | 2.7 | 2.73 |
| AVERAGE OF POS | 2.733333 | 2.76 | 2.7 | 2.715 | 2.7225 | | 2.7 | 2.715 |
| AVERAGE | 2.720833333 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE: CLIENT RELATIONSHIP MANAGEMENT**

**COURSE CODE: CSC22504**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | COURSE OUTCOMES | BLOOM'S TAXONOMY LEVEL |
|---|---|---|
| **CO1** | **CO1: Define** task management using assignment rules, presence, and work notes | III (APPLY) |
| **CO2** | **CO2: Use** various script types throughout the platform | IV(ANALYZE) |
| **CO3** | **CO3: Explain** Flows and Workflows for process automation | III (APPLY) |
| **CO4** | **CO4: Choose** Access Control rules to protect ServiceNow instance data | VI(CREATE) |
| **CO5** | **CO5: Formulate** Capturing and moving configurations between instances, using update sets | IV(ANALYZE) |

**Table 1: CO, PO, PSO MAPPING**

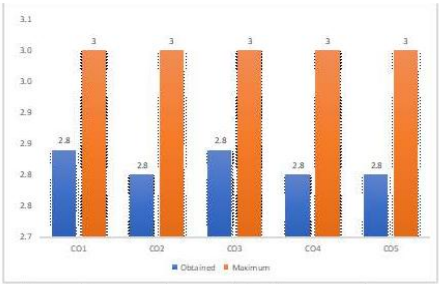
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | P08 | PSO 1 | PSO 2 | PSO 3 | PS O4 | |
| 1 | H | H | | H | H | | | H | S | H | | H | |
| 2 | | S | | | | H | H | S | S | S | | | |
| 3 | H | H | H | H | H | H | S | H | H | S | S | H | |
| 4 | H | | H | H | S | | S | S | H | H | S | S | |
| 5 | H | | H | | H | | H | S | H | H | H | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 73.5 | 1.0 | 2.6 | 91.8 | 3.0 | 3.0 | 2.8 |
| CO2 | 100.0 | 3.0 | | | 100.0 | 3.0 | | | 100.0 | 3.0 | 73.5 | 1.0 | 2.5 | 91.8 | 3.0 | 3.0 | 2.8 |
| CO3 | 100.0 | 3.0 | 98.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 73.5 | 1.0 | 2.6 | 91.8 | 3.0 | 3.0 | 2.8 |
| CO4 | | | 98.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 73.5 | 1.0 | 2.5 | 91.8 | 3.0 | 3.0 | 2.8 |
| CO5 | | | 98.0 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 73.5 | 1.0 | 2.5 | 91.8 | 3.0 | 3.0 | 2.8 |

| AVERAGE | AVERAGE |
|---|---|
| 3 | 2.816 |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.84 | H 2.84 | | H 2.84 | H 2.84 | | | H 2.84 |
| CO2 | | | | | | H 2.8 | H 2.8 | |
| CO3 | H 2.84 | H 2.84 | H 2.84 | H 2.84 | H 2.84 | H 2.84 | | H 2.84 |
| CO4 | H 2.8 | | H 2.8 | H 2.8 | | | | |
| CO5 | H 2.8 | | H 2.8 | | H 2.8 | | H 2.8 | |
| AVERAGE OF COS FOR POS | 2.82 | 2.84 | 2.813333333 | 2.826666667 | 2.826666667 | 2.82 | 2.8 | 2.84 |
| AVERAGE OF POS | 2.815 | 2.84 | 2.813333 | 2.822222 | 2.822222 | 2.82 | 2.8 | 2.84 |
| AVERAGE | 2.821597222 | | | | | | | |

## COURSE OUTCOME MAPPING

### MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

**COURSE TITLE:INTRODUCTION TO DIGITAL TECHNOLOGY**

**COURSE CODE:CSC22505**

**CREDITS: 4**

**DEPARTMENT: B. Sc. COMPUTER SCIENCE AND COGNITIVE SYSTEMS**

**Programme Outcomes – (B. Sc.)**

**B. Sc.:**

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

**PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):**

**Students will be able to:**

**PSO1.** Demonstrate in-depth knowledge in the foundational areas of the mathematical sciences and Communicate mathematical ideas using numerical, graphical and symbolic representations.

**PSO2.** Recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.

**PSO3.** Use emerging technologies and computing concepts.

**PSO4.** Apply mathematical, computational and statistical tools to detect patterns and model performance.

| | **COURSE OUTCOMES** | **BLOOM'S TAXONOMY LEVEL** |
|---|---|---|
| **CO1** | **CO1: Understand** the fundamental concepts of digital technology | II (UNDERSTAND) |
| **CO2** | **CO2: Recognize** the use of digital technology in various industries | VI(CREATE) |
| **CO3** | **CO3: Understand** the principles of Automatix | II (UNDERSTAND) |
| **CO4** | **CO4: Understand** the principles of Automation everywhere | II (UNDERSTAND) |
| **CO5** | **CO5: Create** bots and understand their various types | VI(CREATE) |

**Table 1: CO, PO, PSO MAPPING**

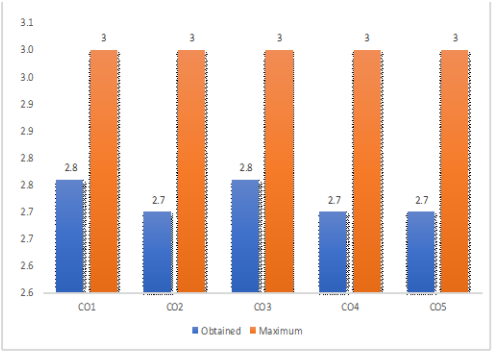
| Course outcomes | Programme Outcomes | | | | | | | | Program Specific outcomes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | P08 | PSO 1 | PSO 2 | PSO 3 | PS O4 | |
| 1 | H | H | | H | H | | | H | S | H | | H | |
| 2 | H | | H | | | H | H | S | | | | | |
| 3 | H | | H | H | H | H | S | H | H | | H | H | |
| 4 | | | | H | S | H | S | | H | H | | | |
| 5 | H | H | H | H | H | | H | S | H | H | | H | |

**H: Highly Supportive** **S: Supportive**

## Table 2: COURSE OUTCOME ATTAINMENT

## ATTAINMENT SCALE:

**Pass percent of 85% and above= 3**
**Pass percent between 75% - 85%= 2**
**Pass percent between 75%- 65%= 1**
**Pass percent of less than 65%= 0**




| co | mid exam 1 | | mid exam 2 | | group discussion | | assignment | | viva | | Attendence | | | External Exam | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | pass% | Attainment level | co wise internal average | pass% | Attainment level | co wise external average | co wise total average |
| CO1 | 100.0 | 3.0 | | | 100.0 | 3.0 | 100.0 | 3.0 | 100.0 | 3.0 | 46.9 | 0.0 | 2.4 | 95.9 | 3.0 | 3.0 | 2.8 |
| CO2 | **100.0** | **3.0** | | | **100.0** | **3.0** | | | **100.0** | **3.0** | **46.9** | **0.0** | **2.3** | **95.9** | **3.0** | **3.0** | **2.7** |
| CO3 | 100.0 | 3.0 | 93.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 46.9 | 0.0 | 2.4 | 95.9 | 3.0 | 3.0 | 2.8 |
| CO4 | | | **93.9** | **3.0** | **100.0** | **3.0** | | | **100.0** | **3.0** | **46.9** | **0.0** | **2.3** | **95.9** | **3.0** | **3.0** | **2.7** |
| CO5 | | | 93.9 | 3.0 | 100.0 | 3.0 | | | 100.0 | 3.0 | 46.9 | 0.0 | 2.3 | 95.9 | 3.0 | 3.0 | 2.7 |

| AVERAGE | AVERAGE |
|---|---|
| **3** | **2.724** |

**RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)**

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

## Table 3: PROGRAMME OUTCOME MAPPING

**Instruction:**

**1. Copy the completed table 1.**

**2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**

**3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO. ]**

| OUTCOME | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | H 2.76 | H 2.76 | | H 2.76 | H 2.76 | | | H 2.76 |
| CO2 | H 2.7 | | H 2.7 | | | H 2.7 | H 2.7 | |
| CO3 | H 2.76 | | H 2.76 | H 2.76 | H 2.76 | H 2.76 | | H 2.76 |
| CO4 | | | | H 2.7 | | H 2.7 | | |
| CO5 | H 2.7 | H 2.7 | H 2.7 | H 2.7 | H 2.7 | | H 2.7 | |
| AVERAGE OF COS FOR POS | 2.73 | 2.73 | 2.72 | 2.73 | 2.74 | 2.72 | 2.7 | 2.76 |
| AVERAGE OF POS | 2.7225 | 2.715 | 2.72 | 2.7225 | 2.733333 | 2.72 | 2.7 | 2.76 |
| AVERAGE | 2.724166667 | | | | | | | |